



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/642,667	08/19/2003	Yoshihiro Satoh	03186-1/2002-239455	3481
21254	7590	04/07/2006	EXAMINER	
MCGINN INTELLECTUAL PROPERTY LAW GROUP, PLLC 8321 OLD COURTHOUSE ROAD SUITE 200 VIENNA, VA 22182-3817			NOVACEK, CHRISTY L	
			ART UNIT	PAPER NUMBER
			2822	

DATE MAILED: 04/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/642,667

Applicant(s)

SATO, YOSHIHIRO

Examiner

Christy L. Novacek

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11, 13-15 and 17-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-10, 27 and 28 is/are allowed.
- 6) ☒ Claim(s) 11, 13-15, 24-26 and 29 is/are rejected.
- 7) ☒ Claim(s) 17-23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/16/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

This office action is in response to the amendment filed January 19, 2006.

Response to Amendment

The amendment of claim 23 is sufficient to overcome the rejection of claim 23 under 35 U.S.C. 112, second paragraph stated in the previous office action. Therefore, this rejection is withdrawn.

The limitations added to claims 1 and 6 are sufficient to overcome the Green et al. (US 5,773,341) and Toyokawa et al. (US 6,576,509) references, either alone or in combination. Therefore, the rejections of claims 1-10, 27 and 28 under 35 U.S.C. 102(b) are hereby withdrawn.

Information Disclosure Statement

The IDS filed December 16, 2005 has been considered. However, the reference JP 2000-031277 has been lined through on the IDS because this reference was previously listed on the IDS filed August 19, 2003 and was considered.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 11, 14, 15 and 24-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Green et al. (US 5,773,341, previously cited).

Regarding claim 11, Green discloses depositing a metallic conductive film (22) on an underlying insulating film (18), consecutively depositing first (24) and second (26) insulator

Art Unit: 2822

films on the metallic conductive film, patterning the first and second insulator films, etching the second insulator film to have a bottom with a width smaller than a width of the bottom of the first insulator film, patterning the metallic conductive film, and subsequently depositing a third insulator film (75) on the first insulator film, the etched second insulator film and the insulating film (Fig. 11-13; col. 2, ln. 36-57; col. 4, ln. 37-58).

Regarding claim 14, Green discloses that the etching is performed after the patterning of the metallic conductive film (col. 4, ln. 37-52).

Regarding claim 15, Green discloses patterning the metallic conductive film using the first and second insulator films as an etching mask (col. 2, ln. 58-66).

Regarding claim 24, Green discloses that the first insulator film is a nitride film (col. 2, ln. 51-52).

Regarding claim 25, Green discloses that the second insulator film is an oxide film (col. 2, ln. 52-53).

Regarding claim 26, Green discloses forming a semiconductor memory device (col. 1, ln. 5-10).

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Green et al. (US 5,773,341).

Regarding claim 13, at the time of the invention, it would have been obvious to one of ordinary skill in the art to etch the second insulator layer either before or after the patterning of

Art Unit: 2822

the metallic conductive film, as the order of these steps does not result in any functional difference in the product.

Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Green et al. (US 5,773,341) in view of Toyokawa et al. (US 6,576,509).

Regarding claim 29, Green does not disclose what type of etching is used to etch the second insulator film. Like Green, Toyokawa discloses forming transistors of a semiconductor memory device using layers of silicon oxide. Toyokawa teaches that the silicon oxide can be successfully etched using wet etching (col. 9, ln. 32-38). At the time of the invention, it would have been obvious to one of ordinary skill in the art to use wet etching to etch the second insulator layer of Green because Green discloses that the second insulator layer is made of silicon oxide and Toyokawa teaches that wet etching can successfully remove silicon oxide.

Response to Arguments

Applicant's arguments filed January 19, 2006 have been fully considered and they are persuasive, in part.

The Examiner agrees with Applicant's argument regarding claims 1 and 6, in so far as, Green does not disclose depositing a third insulator film on the *etched* second insulator film and etching-back the third insulator film to configure a side-wall film covering the patterned metallic conductive film. Instead, Green discloses depositing the third insulator side-wall film *before* the second insulator film is etched. Therefore, the rejections of claims 1 and 6 as being anticipated by Green are withdrawn.

Art Unit: 2822

Regarding the rejection of claim 11, while the side-wall layer (45) of Green is deposited before the second insulator film is etched, the insulative layer 75 of Green is deposited on the first insulator film, the etched second insulator film and the insulating film after second insulator film has been etched. Therefore, the insulative layer of 75 meets all of the limitations recited in claim 11 of the "third insulator film". Therefore, the rejection of claim 11 as being anticipated by Green is maintained.

Allowable Subject Matter

Claims 1-10, 27 and 28 are allowed.

Claims 17-23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The primary reason for the allowance of claims 1-10, 27 and 28 and the indication of the allowable subject matter of claims 17-23 is the inclusion therein, in combination as currently claimed, of the limitations of depositing a third insulator film on the *etched* second insulator film and etching-back the third insulator film to configure a side-wall film covering the patterned metallic conductive film. This limitation is found in claims 1-10, 17-23, 27 and 28 and is neither disclosed nor taught by the prior art of record, alone or in combination.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 2822

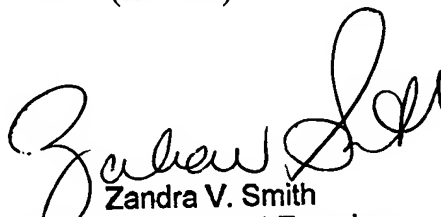
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christy L. Novacek whose telephone number is (571) 272-1839. The examiner can normally be reached on Monday-Thursday and alternate Fridays 7:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith can be reached on (571) 272-2429. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CLN
March 31, 2006


Zandra V. Smith
Supervisory Patent Examiner
1 April 2006